

**Notice of Allowability**

Application No.

10/510,324

Applicant(s)

TANEYA ET AL.

Examiner

Art Unit

Kelly A. Rogers

2828

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to communications filed on 04 October 2004.
2.  The allowed claim(s) is/are 1-19.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some\*    c)  None    of the:
  1.  Certified copies of the priority documents have been received.
  2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
(a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached  
    1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.  
(b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of  
    Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO/SB/08),  
    Paper No./Mail Date 20041004
4.  Examiner's Comment Regarding Requirement for Deposit  
    of Biological Material
5.  Notice of Informal Patent Application
6.  Interview Summary (PTO-413),  
    Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

***Allowable Subject Matter***

Claims 1-19 are allowed.

The closest prior art found does not teach all of the limitations of the independent claims 1 and 12. If it were obvious to combine the closest prior art, all of the limitations would still not be covered.

Nakamura et al. (4,706,101) teaches a semiconductor laser device having a waveguide constructed in a stack of layers including on a transparent substrate a first clad layer, a second clad layer, a third clad layer, an active layer, and a second conductivity type clad layer disposed in this order [figure 6a and column 5, lines 50-55].

Nakamura et al. fails to teach the active layer being an active quantum well layer, a first conductivity type guide layer disposed before the active layer, and a second conductivity type guide layer disposed on top of the active layer. Nakamura et al. also fails to teach the relationship of the refractive indices of each of the layers.

With respect to claim 12, Nakamura et al. fails to teach a first conductivity type first clad layer with three regions, the second region having a larger Al composition ratio than the first and third regions.

Okubo et al. (6,118,799) teaches a semiconductor laser device having a waveguide constructed in a stack of layers including on a transparent substrate, a first clad layer a first conductivity type guide layer, an active quantum well layer, a second conductivity type guide layer, a second conductivity type clad layer, and a second conductivity type contact layer deposited in this order [figure 1A and column 14, line 50 through column 15, line 15].

Okubo et al. fails to disclose a second clad layer and a third clad layer disposed before the active quantum well layer and the relationship of the refractive indices of each of the layers.

With respect to claim 12, Okubo et al. fails to teach a first conductivity type first clad layer with three regions, the second region having a larger Al composition ratio than the first and third regions.

Horie et al (5,619,518) teaches a semiconductor laser device having a waveguide constructed in a stack of layers including, on a transparent substrate, a first clad layer of a refractive index  $n_{c1}$ , first conductivity type guide layer of a refractive index  $n_g$ , an active quantum well layer, a second conductivity type guide layer, a second conductivity type clad layer, and a second conductivity type contact layer deposited in this order, and a relationship of  $n_{c1} < n_g$  [figure 1 and column 11, lines 32-62].

Horie et al. with respect to claim 1, fails to disclose a second clad layer and a third clad layer disposed before the active quantum well layer with refractive indices or with respect to claim 12, that the first clad layer has three regions, the second region having a larger Al composition ratio than the first and third regions. With respect to both independent claims, Horie et al. also fails to disclose the substrate's refractive index  $n_s$ , and a total effective refractive index,  $n_e$  and the relationship of these refractive indices with respect to the refractive indices of the other layers.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 7,092,422 to Kan

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly A. Rogers whose telephone number is 571-272-8047. The examiner can normally be reached on Monday through Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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